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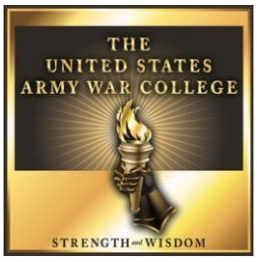
Saving Lives in Prolonged Care Scenarios at Role 1 Requires Changes in Leadership, Force Structure, and Training

by

Lieutenant Colonel Bill A. Soliz
United States Army

Under the Direction of:
Dr. Scott Nystrom and Dr. G. Alexander Crowther

While a Fellow at:
Department of Health and Human Services



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Abstract

A future conflict with a near peer in a contested, multi-domain battlefield will create a complex operational environment, exposing capability gaps for the U.S. Army. Our potential adversaries have capabilities to operate in all domains and can be expected to exploit U.S. vulnerabilities resulting in an anti-access / area denial battlefield (A2AD). Our ability to evacuate casualties to a higher level of care and the capability needed to treat the casualties at the point of injury does not exist for an A2AD scenario. Given this prolonged care capability gap, the Army needs to assess, adapt, and reorganize medical assets to better support the force. Medical capabilities at the Role 1 must be increased to mitigate death in the future A2AD operational environment. The paper proposes leadership actions to influence doctrine, policies and laws, force structure reform of medical personnel authorizations to increase medical capability at the point of injury, and essential training in critical skills needed to save the most lives possible in prolonged care scenarios at Role 1.

Saving Lives in Prolonged Care Scenarios at Role 1 Requires Changes in Leadership, Force Structure, and Training

America's future conflicts will be different than the previous decades of warfare. Adaptation is required. Successful adaptation requires that the U.S. Army modernize and sustain at a high level of readiness to deter war. The U.S. Army must be prepared to fight and win wars quickly. The operational environment facing our forces is expected to be more complex compared to the past 16 years of combat operations.[1] The nature of war will not change. The nature of war is first of all political, but also violent and interactive. These three components are necessary conditions for war. Despite these constraints, the character of warfare is ever-changing. It is shaped by culture, ethics, law, political and military methods, and technology.[2] Analysis of a future conflict with a near-peer adversary in a contested multi-domain battlefield (MDB) exposes current capability gaps for the U.S. Army.[3] Potential adversaries have the capability to operate in all domains, exploiting U.S. vulnerabilities and resulting in an anti-access / area denial (A2AD) battlefield.[4]

How does an A2AD operational environment affect the Army's ability to conduct medical support? The most visible impact is the inability or delayed ability to conduct any medical evacuation from the point of injury to a higher level of care. The "Roles of Care"[5] describes how the Army Health System (AHS) is organized to support the battlefield. It provides a framework for how medical resources and capabilities are distributed at facilities for various levels of command and diverse locations with progressive capabilities. Role 1 describes unit-level medical care and the first care a soldier receives from the point of injury (POI). In addition self-aid, buddy care, and combat lifesavers (non-medical soldiers), Role 1 personnel include the combat medic,

the physician assistant (PA), and the physician. The combat medic and the physician assistant are organically assigned to the tactical unit while the physician is added to fill the requirement through the Professional Filler System (PROFIS). An A2AD battlefield will greatly inhibit air, sea and ground evacuation platforms from reaching, reinforcing, and resupplying the Role 1. This will create a need for prolonged care at the Role 1. The Army's Training and Doctrine Command (TRADOC) documented the following in its capability needs assessment: "Army units currently lack the capability to provide prolonged care (> 60 minutes) at the point of need when evacuation is delayed to decrease patient mortality and morbidity in 100% of patients with survivable wounds to preserve combat power."[6] The Army Chief of Staff has prioritized prolonged care as #9 on the list of capability gaps in TRADOC's capability needs assessment, and has identified this issue as extremely high risk.[7] Prolonged care is The Army Surgeon General's #1 priority capability gap and is being actioned by MEDCOMs Capabilities Development and Integration Directorate (CDID).[8] This paper will demonstrate that medical outcomes can be enhanced in prolonged care scenarios at Role 1 by implementing immediate and budget neutral modifications in leadership doctrine, force structure, and training.

Leadership

Prolonged care scenarios at Role 1 demand strong leadership to uphold standards across doctrine for a range of policies including triage, scope of practice, and mitigation strategies for disease non-battle injury (DNBI), behavioral health, and traumatic brain injury (TBI).

Triage: The U.S. military triage process is fundamentally unchanged since the Civil War. The concept of sorting casualties into categories is sound; however, the priority of who gets treatment when and the necessity of using the expectant category needs to be reassessed at the highest levels of Army command. Analysts anticipate that the MDB operational environment will create casualties in numbers similar to WWII.[9] [10] During the past 16 years of ground combat in Iraq and Afghanistan with air supremacy, the Army became efficient at quickly treating and evacuating patients to higher levels of care with ease using air or ground transport. The “Golden Hour” policy[11] in Afghanistan, a mature theater, has effectively eliminated the need to use triage techniques. U.S. ground forces were fortunate to have a robust combat medical system capable of rapid evacuation and treatment of wounded warfighters with modern hospitals and capabilities comparable to U.S. civilian health care infrastructure. These advanced medical evacuation and treatment capabilities are unlikely to exist in an A2AD environment. Saving as many lives as possible in an A2AD environment will demand a vigorous triage doctrine, a situation unlike the past 16 years. Triage is a dynamic process, with new patients arriving while many existing patients deteriorate. An added complication is the potential for a fluid tactical situation on the ground as the enemy presses forward to achieve battlefield supremacy. This presents an unfamiliar and challenging medical problem. Leadership will need to prioritize training and exercise discipline in order to execute an effective prolonged care program on the battlefield. The most important fact is this: The ground commander owns the battlefield.[12] Saving lives in a prolonged care environment requires unit medical personnel, tactical leaders, and entire units to utilize scenario-based war games today as a joint training exercise. For

example, if ground units need to move every two to three hours, difficult decisions must be made. These include decisions on whether there is enough time for evaluating patients and preparing to move. Difficult questions will need to be asked and addressed. Should the non-ambulatory wounded remain behind? Should valuable medical assets stay with the wounded or move with the unit to complete the mission? Altering treatment priorities by using supplies and treating patients in the minimal and delayed categories before the immediate and expectant patients may conserve combat power and maximize lives saved (reverse triage). Reasoned judgment will need to be drilled on whether and when to preserve supplies or place patients into the expectant category under A2AD conditions. This presents an ethical and moral dilemma for providers. Civilian hospital providers in the U.S. address moral dilemmas using ethics committees. These committees are composed of the healthcare team, the patient and/or patient's family and expert consultants. Concerns and best available evidence are presented and discussed to help inform decision making. These committees emerged in the U.S. for some of the same reasons leaders will face on the battlefield; technological developments, personal values, time-pressure for decision making[13] and unique to combat would be the operational situation on the ground with limited resources. A similar model can be used for Role 1 with a committee comprised of unit medical providers, tactical commanders, and other available personnel trained in prolonged care decision making in an A2AD environment. War gaming casualty scenarios with decision making in peacetime is critical to prepare all involved and enhances patient and battlefield outcomes.

Scope of Practice: One approach for enhancing battlefield outcomes and increasing the medical treatment capability at Role 1 is to expand traditional medical scope of practice for deployed medical providers in an A2AD scenario. This concept has already been in place for decades as combat medics have been trained in advanced skills, able to perform procedures and administer medications in combat they are prohibited from doing in a U.S. hospital or clinic. The Army is currently expanding this concept with its new Expeditionary Combat Medic (ECM). Further assessment of the combat medicine scope of practice for physician assistants and physicians is needed to identify expansion of common surgical procedures needed to save lives in prolonged care scenarios at Role 1. General physician assistants are primary care trained with limited trauma and invasive procedure skills. Nevertheless, they are often the most capable highly skilled tactically proficient prehospital medical provider available during Role 1 prolonged care scenarios.[14] Being organic to the unit, the physician assistant is likely to have influence and relationships with ground commander and unit leaders. The physician at the Role 1 joins the unit as part of the PROFIS system to fill the area of concentration (AOC) 62B Field Surgeon position.[15] The type and skill level of this physician can vary greatly and will be discussed later in the section on force structure. Regardless of what type of physician and physician assistant occupy these billets these providers need increased training, privileging, legal protection, as well as support regulatory and legislative authorities that save lives in a prolonged care scenario. One of the first cases showing the value of expansion of scope of practice is during WWII. Submarines in the Pacific were unable to surface to get a sick patient to the hospital. In this case, a Navy corpsman aboard a submarine performed an appendectomy that

saved a sailor's life.[16] The decision to take action was made after a discussion between the corpsman and the commanding officer (CO). The CO approved the action based on the confidence and trust in the corpsman to successfully perform the procedure. The corpsman had seen the procedure performed in a hospital and was confident he had the skill to be successful. However, he had never performed this procedure and lacked proper medical instruments. There were three documented appendectomy cases that were performed during this period of WWII and all survived.[17] Indirect evidence indicated that the Navy medical leadership criticized these actions, preventing future attempts to perform appendectomies by Navy corpsmen.[18] The first and best option is always to evacuate patients to a higher level of care. However, life or death battlefield situations during prolonged care scenarios require the Army to take appropriate action to train, equip, and protect providers from legal actions or state licensing disciplinary actions. Senior Army leaders should take action to seek authorities now and fully prepare, equip, credential, and grant "combat privileges" to Role 1 providers to save lives in an A2AD prolonged care scenario. Currently, no battlefield credentials or privileges exist to delineate critical skills training nor competency needed or expected for the prehospital combat environment.[19] Simply transferring the provider's hospital credentials and privileges to the prehospital Role 1 MDB expeditionary environment is insufficient to allow the provider to administer necessary treatment of combat injuries and illnesses expected in a prolonged care scenario.

DNBI Mitigation: Disease Non-Battle Injuries can be greatly reduced through unit discipline and command emphasis on the importance of force health protection. Data show that disease continues to surpass battle injuries in war.[20] Total evacuations in Iraq

and Afghanistan from 2001-2009 were 52,283 with 50% being disease alone at 26,035 casualties, battle injuries only accounted for 19% at 10,103.[21] Loss of combat power due to preventable illness reduces mission capable battle units and may render units combat ineffective. Prolonged care scenarios increase the risk of DNBI especially if operating in a dense urban environment with disruptive infrastructure. In the A2AD battlefield, resupply of medications to treat DNBI is unlikely. Disciplined implementation of unit field sanitation is critical for maintaining combat power in all conflicts. It is even more important in prolonged care scenarios. Oftentimes, leaders select the wrong personnel in the unit to lead the field sanitation program. Soldiers with field sanitation mitigation responsibilities typically receive little, if any, training and rarely sustainment training. Field sanitation kits are typically not stocked and maintained to standard. In the recent mature theaters of Iraq and Afghanistan, contractors were responsible for field sanitation. The contractor option may not be available in the future fast-paced, expeditionary operational environment during A2AD scenarios. Our force must train and prepare for an expeditionary war with the likelihood of a theater that never reaches maturity. The bottom line is that the field sanitation program is a Commanders program.[22] Company medics are not responsible for field sanitation. However, medics can play a valuable role in teaching, coaching, and supporting the program. Evidence suggests that field sanitation is only effective if command at all levels takes ownership of the program. Commanders must select the best soldiers to lead the field sanitation program in their units and ensure they receive the proper initial and sustainment training.[23] Field sanitation kits can be customized and augmented for particular environments and missions where warfighters are engaged. Field sanitation kits must

be stocked, customized, and used in training exercises. Leadership emphasis on force health protection is vital to address and mitigate the major risk of DNBI and required to enhance medical outcomes in prolonged care scenarios.

Behavioral Health Mitigation: Engaged and caring leadership, cohesive culture, and a positive command climate can reduce the occurrence of behavioral health needs during prolonged care in combat operations. Acute psychiatric decompensation (losing functionality) is the top DNBI diagnosis expected to occur in prolonged care scenarios at an incidence of 846.8 / 1,000 person-year on the battlefield.[24] The violence of war can be traumatic when U.S. forces see soldiers being blown up with artillery and precision weapons. Non-physically injured soldiers can be expected to have higher rates of psychiatric events as a result of this trauma. The emotional state of unit survivors may decline, rendering individuals or even entire units ineffective. Requesting a combat operational stress control (COSC) team may not be possible in the A2AD environment. It is unlikely that the Army's current Battlemind Psychological Debriefing Model will be utilized without this COSC team being present to facilitate traumatic event management interventions. Leaders can mitigate emotional decline by engaging soldiers with the psychological first aid (PFA) framework. Preliminary observations and lessons learned from literature of disaster victims suggest PFA interventions lead to improved physical and emotional health.[25] The U.S. Navy uses PFA in its Special Psychiatric Rapid Intervention Teams (SPRINT) which responds to sites of military disasters. The teams serve as consultants to help Command address the mental health needs of their troops. After a traumatic event, it is important that leaders reduce emotional distress by creating and sustaining an environment of 1) safety, 2) social connectedness, 3) calm, 4) self-

efficacy, and 5) hope. Leaders must build rapport and trust within their unit and establish a personal connection with their soldiers and enable them to express their needs and concerns. Efforts should be made to connect them with their squad and team members who serve as a social network essential for coping. Reinforcing resiliency and self-care during deployment will assist individual soldiers with techniques for maintaining resiliency and sufficient functioning throughout the deployment. Lessons learned from the World Wars to today have revalidated the forward treatment for psychiatric casualties and the value of psychiatric screening. The P.I.E. principals of Proximity (treat them close to the line), Immediacy (treat them without delay), and Expectancy (ensure everyone has the expectation they will return to the front) seem to hold sound today.[26]

Traumatic Brain Injury: Educating commanders and leaders at the tactical line level on Traumatic Brain Injury (TBI) management will maintain combat power by supporting decision making. TBI has been called the signature injury in the recent wars in Iraq and Afghanistan.[27] The future operational environment will likely still be faced with TBI as a common injury to manage on the battlefield. Without the ability to evacuate, leaders and medical providers will need a decision-making process to care for injured soldiers while sustaining combat power to complete the mission and ensure survivability. New developments in diagnosis and treatment promise to improve patient health and unit readiness in the area of TBI. However, the key to success at the Role 1 will depend on the leaders having the knowledge to make the best decision for each situation on the ground. Leaders and medical providers who managed soldiers in the past with concussion must now understand that the standard treatment approach used

from 2008-2016 was the wrong approach. Cocooning, as it was called, involved a “dead man’s profile” where all forms of exercise and brain stimulation were restricted to include smart phones, computers, video games, television, exposure to light and even long conversations. Guidelines are now encouraging most patients to return to activities as soon as 24-72 hours post-concussion as long as it does not increase symptoms or risk of re-injury.[28] Removing soldiers from duty while deployed until symptom free usually 12-14 days has proven to be sound practice as soldiers return to duty with better cognitive and physical capability as well as reduce the severity and frequency of future injuries.[29] These developments, practices and policies will help leaders manages patients at the Role 1, decreasing the need for evacuation while maintaining combat power.

Force Structure

Providing combat health support to the force in the future MDB environment requires reforming the Army medical force structure. All components of the Army medical force need to be restructured and realigned to better support the force of the future. This action can be budget neutral as identified positions can be eliminated and used as a bill payer for combat medical force multiplier authorizations. A review and analysis of all Army medical enlisted military occupational specialties (MOS) and officer AOC authorizations should be conducted and compared against the need in the combat health support mission. Every medical soldier MOS/AOC should have a defined deployable requirement to support the force in a theater of war. A rebalance should be implemented to increase authorizations in the inventory for the skillsets needed to support the force. Medical skillsets without a combat role should be eliminated. If a

medical skillset is needed to support the garrison military healthcare benefit, measures should be taken to fill those positons with civilian GS or contract support. What is needed is an agile, adaptable, customizable, and deployable medical capability force that maintains a high state of readiness.[30] The medical capability force must be flexible and able to be embedded with the tactical maneuver unit as early as possible prior to deployment or, if financial feasible, be organic to the unit Modified Table of Organization & Equipment (MTOE).[31] The process of tasking medical forces to support operational missions must also be analyzed and reformed to better support the combatant commander's mission. Army medicine has 15,365[32] officers in the active component to support the Army medical mission. The majority of these officers are authorized to support the medical benefit in Army hospitals or in other Table of Distribution and Allowance (TDA) positions and the minority are organically assigned to the deployable force on MTOE. Further analysis of the inventory compared to the deployable need of the force will bring clarity and identify efficiencies for the reform. Additional medical personnel should be moved to MTOE organically with place of duty at a military or civilian medical treatment facility (MTF) for readiness training. Over the years modifications and changes have shaped the Army medical footprint at the Role 2 and 3 but nothing has changed at the Role 1. In 1973 PAs were added to the Army specifically to replace the battalion physician due to a physician shortage secondary to the ending of the Vietnam era physician draft.[33] Furthermore, the success of the helicopter in medical evacuation during the Korean[34] and Vietnam[35] wars proved to be a long-lasting solution to bypass the battalion aid station to surgical and hospital care. PAs successfully served as the Army's battalion level "Doc" for 11 years without an assigned

physician. It was not until 1984 that the Army made the decision to augment battalion PAs with physicians for overseas contingency to increase capability due to predicted conflict during Cold War era.[36] This lead to the birth of PROFIS with MTF assigned physicians being designated to deploying units meeting the requirements without expending Army funds or sacrificing end strength. Doctrine and force structure is in need of critical reform at the Role 1 battalion aid station.

AOC 62B Field Surgeon: Selecting the appropriate provider AOC to fill the 62B Field Surgeon position at the Role I will enhance the prolonged care capability throughout force. Army Regulation (AR) 601-142 describes the PROFIS process and substitutability criteria for all AOCs. The primary specialty 62B listed level of replacement is 100% with three different substitution groups and a list of 20 different physician specialists. These physicians are all credentialed and competent clinicians in their specialty. However, many of them are far removed from general medicine practice and do not possess the trauma skills necessary for combat. A more detailed analysis is needed to produce a list of the appropriate provider AOCs that will provide the best capability to the force at the Role 1. As a preliminary review of those listed as substitutions, the AOCs family medicine, emergency medicine, and internal medicine are likely the best suited for the field surgeon role while the pediatrician, dermatologist, allergist, oncologist, hematologist, endocrinologist, rheumatologist, clinical pharmacologist, and others are likely to fall short of required combat skills. A second senior physician assistant may be the ideal and primary choice[37] to fill the 62B skillset requirement although PAs are not listed as a substitution for 62B.[38] Once the Army has a list of the ideal AOCs then efforts should be made to train and recruit more of those

specialties that will better support the force. Reversing the PROFIS process is another change for consideration. Instead of providers being assigned to the MTF and filling the unit upon deployment, readiness and capability will be enhanced by combat essential providers being organically assigned to the maneuver unit belonging to the ground commander (like the current PAs are assigned). As a follow on, they could perform clinical duties for readiness training at military and civilian MTFs. However, the Army gaining more physicians in the ideal AOC for every Army battalion is unrealistic due to the overall shortage of physicians in the United States[39] and the competition to recruit and retain them. PAs seem to be the ideal combat multiplier as they possess the knowledge, skills, attributes, and experience for battalion level operations.[40]

AOC 65D Physician Assistant: Assigning an additional PA (senior to the currently authorized by MTOE) to the Role 1 will increase prolonged care capability for the future force. A second PA who is organic to all battalion level units (Role 1) will eliminate the need for a PROFIS physician, and consequently saving this specialty provider asset for Roles 2 and 3. PAs have been the medical subject matter experts and leaders at the battalion aid station since their existence. The PA profession was created in 1967 due to a nationwide shortage of physicians, particularly in primary care. The training program was based on a medical model designed to fast track training of physicians during World War II. In the 1960s the Army was losing many physicians as the draft ended. Army PAs are all “groomed and raised” in Role 1 as this is usually their first assignment out of training. PAs understand prehospital austere medicine. They are attuned to the maneuver tactics and ground commander’s intent. PAs are the most deployed AOC in the AMEDD with 1,703[41] deployments since 2001 with a current

inventory of only 810[42]. Other AMEDD AOCs are far behind with the next highest deployed being the medical surgical nurse with 557[43] (inventory of 1348[44]), aeromedical evacuation officer 503[45] (inventory of 300[46]), behavioral science 428[47] (inventory 529[48]), family medicine 406[49] (inventory 562[50]), critical care nurse 392[51] (inventory 491[52]), and nurse anesthetist 344[53] (inventory 331[54]). This represents a demand signal for the need and combat utilization of PAs in the Army. The Army owns the PA training program in a combined service schoolhouse called the Interservice Physician Assistant Program (IPAP) located on Fort Sam Houston, Texas. This is an ideal platform for surging a critical combat capability needed for future conflicts to fill the prolonged care gap. Army PAs have grown beyond the typical primary care provider of the past. The Army trains some PAs at a highly competent level in clinical doctorate specialties in Emergency Medicine, General Surgery, Orthopedic Surgery and even a fellowship in emergency ultrasound. Currently there is only one PA authorized on the MTOE at the Role 1, usually brand new out of training that is proficient in medicine but lacks the trauma, resuscitative, and advanced skills needed for solutions during prolonged care scenarios. Adding a 2nd PA organically to all Role 1 as a senior and mentor that can be filled by a PA trained in one of the three clinical doctorate programs, or alternatively a seasoned field grade PA with vast skill, knowledge and experience serving many years at the battalion and brigade level.[55]

MOS 68C Licensed Practical Nurse (LPN): Authorizing two army practical nurses per battalion aid station MTOE will greatly improve the capability to provide prolonged care at Role 1. Nurses already possess some of the skillsets lacking at Role 1 necessary for sustainment during prolonged care.[56] They are proficient in prolonged

patient care in the inpatient setting which involves vital sign trends, prevention of decubitus ulcers, Foley catheter and intravenous placement and care, blood collection and delivery, and possess a vast knowledge of medication and routes of administration. The patient hold and total care capability the LPN can bring is clear as they can manage the care of the sedated, obtunded and comatose patient. They can also assist and lead in sick call as their skills will be valuable in triage and patient assessment. Furthermore, organic assignment to the unit will provide additional education, training, and mentorship for all of the medics in the unit as well as the patient care team working with the PAs and medics. This is not a foreign idea. The Army once had one staff sergeant LPN authorized as the sick call NCOIC at the battalion aid station in the 1980s and ended in 1988.[57] The Army has 1737[58] 68Cs in the active component with 1223[59] in the medical command (MEDCOM) and only 289[60] organically assigned to forces command. A portion of the MEDCOM 68Cs are designated as PROFIS personnel to fill positions in combat support hospitals. However, future analysis may demonstrate the ability to assign to the battalion aid station to increase capability. Only after successful completion of their yearlong training to gain the MOS 68C, the LPN will ideally be assigned to an MTF to work and develop their skills in an Intensive Care Unit (ICU) or similar setting as they are trained and mentored by registered nurses. Once they reach the grade of E4(P)/E5 they will best be utilized in a battalion Role 1 MTOE assignment.

MOS 68W Combat Medic Specialist: Todays Army combat medic is neither trained nor equipped to meet the sustainment needs of prolonged care scenarios. The Army has already taken steps that will enhance capabilities in prolonged care by implementing the next generation combat medic termed “Expeditionary Combat Medic

(ECM)". The 26 week inaugural course graduated 10 ECMs in 2017 with focused training in four areas: Focused Primary Care, Force Health Protection, Prolonged Care, and Tactical Combat Casualty Care.[61] The plan is to train 40 ECMs in FY18, 240 ECMs in FY19 and then 360 ECMs in FY20 and beyond. Utilization of this capability at Role 1 is expected to be one per functional line company positioned as its senior medic and two more at the battalion aid station. To ensure all battalions are appropriately manned to this utilization, the Army must train 2,230 ECMs. With the current projected six classes a year starting in FY20, it will take eight years to meet the force requirement of 2,230 assuming the Army retains all of those trained. This is an unrealistic assumption. This new capability brings promise. However, the time it takes to train and the number of ECMs that are required to operationalize this capability may come too late for a conflict that may arise in the near future. Army leadership must consider appropriate allocation of resources and realistic scenario-based training platforms with competent instructors in order to rapidly produce this valuable battlefield capability.

Battalion Aid Station: Doctrinal changes and designs are needed to transform today's battalion aid station into an adaptive, flexible, mobile, and small medical treatment platforms to best support the force in MDB. The traditional semi-stationary location of the battalion aid station where the expectation was to sit and wait for patients to come from the front and for Role 2 ambulances to pick up patients is unlikely to meet the need of the A2AD environment. However, reenergizing past concepts like "tailgate medicine" and "split ops" with an increased capability will serve the environment well. The battalion aid station should be redesigned into two mobile trauma resuscitation critical care teams (TRCCT). The TRCCT will be composed of a PA, LPN, and an ECM.

This dynamic team of three will maneuver on the battlefield with the force and support the forward medics and the small forward tactical teams. Each battalion having two TRCCT enables the ground commander to have the flexibility to place this medical maneuver capability forward to any element expected to draw more casualties according to the ground force plan and threat.

Training

Training the Role 1 providers (PAs and PROFIS physicians) in whole blood program (WB), damage control resuscitation (DCR) and damage control surgery (DCS) intervention will save the most lives on the battlefield. The number one cause of death on the battlefield is from hemorrhage, most often before the patient reaches the hospital.[62] Similarly, prehospital transfusions with blood products have been associated with greater likelihood of survival.[63] Today's Role 1 providers are ill-trained and equipped to perform these life-saving capabilities during prolonged care scenarios.

All medical professionals in the Army must embrace the trauma culture of their profession as their role demands they be effective "trauma battlefield providers". Physicians and PAs may develop a culture nested into the civilian hospital based medicine model as structured into their training programs and later used in their practice locations. The hospital setting in a fixed facility with unlimited resources and every medical specialty on call is substantially different than a primary care provider at the battlefield Role 1 in a prolonged care scenario. The Army must grow, train, equip, and develop battlefield providers at all roles of care. Shifting the mindset and culture of the force will help leaders and providers alike focus on the role of Army Medicine, conserve the fighting strength on the battlefield to enable success in ground combat.

Whole Blood (WB) Program: The Role 1 provider must master the decision making process of blood collection and transfusion as well as set up a unit program and procedures to ensure proper organization and execution. Knowing the best options available for your unit mission and building flexibility into the program by conducting prescreening on all unit members is essential. Army medics are being trained in walking blood bank operations; they will seek guidance from their Role 1 providers for continued training and execution during combat. Blood components are usually unavailable at Role 1 and logistically not feasible to store and transport ABO group specific WB. The best and safest option for the Role 1 environment for rapid availability will be group O from donors with low antibodies (low titers in anti-A/B).[64] A possible total force solution to prepare for this scenario would be to screen the entire force during pre-deployment soldier readiness processing (SRP) and provide a list of ideal donors to the unit's commanders for use by the medical assets supporting that unit. These results can be documented in the soldier's medical readiness screening similar to documentation of blood type and the enzyme deficiency (G6-PD) blood results to consider for malaria prophylaxis and treatment. At a minimum to have a lifesaving WB program at the Role 1 all medical personnel need to be trained to use Eldon cards for blood type testing as well as competence in donor collection and transfusion procedures.

DCR/DCS: Role 1 providers must become competent in resuscitation skills and surgical procedures in order to control hemorrhage and mitigate death during prolonged care scenarios. In garrison these Role 1 providers spend most of their time in an outpatient clinic or hospital treating or preventing injury and illness. In order to gain and sustain these DCR/DCS skills they must receive initial training and then have a

sustainment plan to maintain the knowledge and skills needed to stay proficient. Spending time in the emergency department, operating room, and intensive care unit will give these providers the best training possible in peacetime. Training as a team with all TRCCT members will be the ideal scenario for individual and collective training. Role 1 providers are capable of learning any surgical procedure taught to them by competent surgeons. However, these providers may lack the experience to make decisions during complex surgical situations such as surgical management of injuries and hemorrhage to the chest and abdomen.[65] However with proper training and a realistic sustainment plan, these Role 1 providers should be capable of performing many of the life-saving surgical interventions traditionally conducted at the forward surgical team (FST). The following surgical interventions should be considered as additions to the Role 1 provider combat skill set: placement of external fixators for broken limbs, rapid amputation of mangled limbs, surgical opening of muscle compartment (fasciotomy), and temporary restoration of blood flow to a limb using vascular shunts. Current courses these providers can attend to improve their skills include the emergency war surgery course (EWSC) and combat extremity surgery course (CESC). Role 1 providers can take a pipeline of training courses to achieve readiness or these competencies can be combined into a holistic Battlefield Provider Course (BPC).

Role 1 Battlefield Provider Course (BPC): Developing a Role 1 BPC will enhance critical combat skills and helps instill the trauma culture in Army Medicine. It should be created as a stand-alone training course (not attached to graduate medical education (GME) or PA Training) for physicians and PAs to complete immediately after their residency/clinical training. The Military and Emergency Medicine curriculum at the

Uniformed Services University Medical School can be used as a model to develop this Role 1 BPC. The curriculum encompasses the role of the uniformed medical officer, prehospital/operational medicine, leadership development, command and staff, global health, logistics, CBRN, DNBI, TCCC, PC scenario training and much more. Further analysis will be needed to list out the skills that should be trained for the Role 1 providers followed by course length and cost. The Defense Medical Readiness Training Institute (DMRTI) sponsors the Combat Casualty Care Course (C4). It is a course designed to enhance the operational medical readiness and pre-deployment trauma training skills of medical officers for Roles 1 & 2. Students of this course gain some exposure and familiarization with austere medical care and informative lectures. However, the course falls short of competency for Role 1 tasks and lacks metrics to achieve the Army standard of "Objective T".[66] [67] It is an 8 day course that uses civilian training programs Advanced Trauma Life Support (ATLS), Prehospital Trauma Life Support (PHTLS), and Trauma Nursing Core Course (TNCC)] for three days and then follows with lectures and orientation field training for four days. GME programs frequently send their physicians to C4 as part of their clinical curriculum chiefly to attend and earn credit for ATLS. Redesigning this course to focus on an approved Role 1 providers critical skills task list (CSTL) should substantially enhance the Army's Role 1 capability. Limiting attendance primarily to those assigned or destined to the battalion aid station will provide ample training slots. The redesigned program should have some connection and curriculum coordination with the ECM course, tactical combat medical care (TCMC), EWSC, CESC, and others pertinent to the CSTL. ATLS should be eliminated from C4. Consideration should be given to offering Role 1 BPC to LPN/68C

and ECM/68W as well. Role 1 providers, LPNs and ECMs should all learn the same skills and understand the capability they must provide at the POI. This can begin as a team training platform for the TRCCT with follow-on sustainment training at the Army Trauma Training Center or other high trauma acuity civilian centers to develop and train the metrics of Objective T in resuscitation, surgical skills, and critical care management.

LPN Training: Once the LPN is MOS qualified as a 68C and has gained experience in the ICU they will need prehospital combat medical training pertinent to the battalion level operations they will enter. The primary priority should be to master TCCC and the guidelines published by the Committee on TCCC proven to save lives at the POI. Second, LPNs need similar skills covered in the ECM course with more specific focus in areas of sedation management, whole blood program, advanced wound management and ventilator management. After proficiency is gained in these individual skills, collective training and sustainment training should take place with PA and ECM at a military or civilian MTF followed by unit level tactical maneuver training at home station and readiness training centers.

ECM Training: Finding funding offsets and growing the ECM course to individually train all Army medics in the Army should be a priority. This will take a major investment to expand this course to take on more students or to revamp and extend the current 68W course to encompass the ECM curriculum. As discussed prior, it will take approximately 8-10 years to train 2,230 ECM goal with the current training projection which doesn't account for attrition. Senior Army leaders will have to make some strategic decisions on how to improve this capability by altering the training platform, where to assume risk, then seek and invest the resources needed to achieve the

capability desired. The biggest challenge to medic training has been a long lasting challenge; how do you sustain the skills once trained? Role 1 medics belong to the line commanders and require advocacy, resources and support in order to execute a readiness training plan to sustain their skills. The ECM initiative has proposed medical sustainment requirements modelled after the Special Operations Combat Medical Sergeants Sustainment Course (SOFMSSC). These requirements include medical proficiency training in a hospital 2 weeks every 2 years, a nine-day refresher course and forty hours of non-training training per year. This is a modest plan, however, it will need to be written into regulation/policy and resourced in order to be successful. Bringing back a version of the garrison battalion aid station for medic training and patient contact will be useful to train and develop sick call skills. Medics should also screen and evaluate their unit soldiers and create a process for the battalion PA to coach, teach, and mentor in peacetime. This will provide the medic hands-on training to include conducting triage and instructing self-care. It saves time and resources while allowing the medic to develop medical skills and gain confidence in clinical decisions.[68] Brooke Army Medical Center has implemented the mobile medic project which sends medics out to their battalions to conduct sick call with a provider connected via video teleconference for support.[69] This mobile medic program recently deployed two medics to Puerto Rico with the 14th Combat Support Hospital to test its capability in support to those affected by Hurricane Maria. Advancing training in telemedicine assets as technology evolves will increase medical capability when expertise does not exist at the Role 1.[70] This approach shows promise in garrison and abroad to improve the Role 1

capability. However, further developments are needed to determine its usefulness in the peer adversary electronic and cyber warfare arena.

Conclusion

The golden hour is dead in the A2AD battlefield. We must ensure the American people and Congress understand this new operational environment and threat in order to gain support and resources to modernize our medical force to save lives in the future battlefield. Many will die prior to reaching lifesaving care. All combatants must be trained in and perform to standard TCCC. Without this immediate intervention there will not be a need for prolonged care as the casualties will be dead. Along with increasing our capability in the U.S. military, NATO partners and allies must be leveraged to also increase their medical capabilities for the future battlefield.[71] Commanders and ground force leaders should be prepared to make difficult decisions during prolonged care and they must prepare for those situations today. Medical providers need “combat credentials” so they are aware, trained, and competent to perform lifesaving tasks. Force structure changes are needed at the battalion aid station to support the force with the medical capability needed for the threat they will encounter absent the capability to evacuate or receive medical reinforcements. Providing the appropriate advanced training and skills to Role 1 providers is essential to increasing capability and saving lives during prolonged care. The cost of failure to take action to increase Role 1 capability now will result in a staggering number of unnecessary fatalities for the U.S. military unimaginable in modern warfare. The strategic and political cost of lives lost in an A2AD environment will be high, as bad news flows to the public through the media

and our adversaries. Absent changes to enhance Role 1 capability, our freedoms and way of life are at risk as the American public “will to fight” diminishes.

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